

WHAT IS CLAIMED IS:

1. A servo track writer assembly for recording servo pattern information on a disc, the assembly comprising:
 - a spindle assembly having a hub supporting the disc and a spindle motor for rotating the hub;
 - an actuator assembly having an actuator arm supported by an actuator bearing for positioning the actuator arm relative to the disc, wherein at least one of the spindle motor and the actuator bearing comprises a gas-lubricated bearing with a working fluid comprising helium; and
 - a servo recording head supported by the actuator arm relative to the disc to record the servo pattern information on the disc as the spindle motor rotates the disc and the actuator bearing positions the actuator arm.
2. The servo track writer assembly of claim 1 wherein the spindle motor comprises the gas-lubricated bearing with the working fluid comprising helium.
3. The servo track writer assembly of claim 1 wherein the actuator bearing comprises the gas-lubricated bearing with the working fluid comprising helium.
4. The servo track writer assembly of claim 1 wherein:
 - the spindle motor comprises the gas-lubricated bearing with the working fluid comprising helium; and
 - the actuator bearing comprises a further gas-lubricated bearing with a working fluid comprising helium.
5. The servo track writer assembly of claim 1 wherein the gas-lubricated bearing comprises a hydrostatic bearing comprising a gap between opposing bearing surfaces in the bearing and a gas inlet and a gas outlet, which are coupled to the gap.

6. The servo track writer assembly of claim 5 and further comprising:
a helium gas source coupled to the gas inlet through a pressure regulator;
and
a helium gas recovery tank coupled to the gas outlet.
7. The servo track writer assembly of claim 1 wherein the gas-lubricated bearing comprises a hydrodynamic bearing.
8. The servo track writer assembly of claim 1 wherein the working fluid comprises at least 70% helium by volume.
9. The servo track writer assembly of claim 1 wherein the spindle motor is a dedicated servo track writing spindle motor that is external to a disc drive in which the disc is to be installed.
10. The servo track writer assembly of claim 1 wherein the spindle motor is mounted within a disc drive in which the disc is installed.
11. A method for recording servo pattern information on a disc, the method comprising:
 - (a) positioning the disc on a hub of a spindle motor;
 - (b) activating the spindle motor to rotate the disc;
 - (c) positioning a servo recording head relative to a desired radial position on the disc with an actuator having an actuator bearing;
 - (d) signaling the servo recording head to record the servo pattern information on the disc; and
 - (e) maintaining separation of opposing bearing surfaces with a working fluid in a gas-lubricated bearing within at least one of the spindle motor and the actuator bearing during (d), wherein the working fluid comprises helium.

12. The method of claim 11 wherein (e) comprises maintaining separation of opposing bearing surfaces with helium within the spindle motor during (d).
13. The method of claim 11 wherein (e) comprises maintaining separation of opposing bearing surfaces with helium within the actuator bearing during (d).
14. The method of claim 11 wherein (e) comprises maintaining separation of opposing bearing surfaces with helium within both the spindle motor and the actuator bearing during (d).
15. The method of claim 11 wherein the gas-lubricated bearing comprises a hydrostatic bearing and (e) comprises pumping the helium into a gap between the opposing bearing surfaces at a predetermined pressure during (d).
16. The method of claim 15 and further comprising:
(f) recovering the helium from the gap through an exhaust port in the gas-lubricated bearing.
17. The method of claim 11 wherein the gas-lubricated bearing comprises a hydrodynamic bearing and (e) comprises supplying the helium to a gap between the opposing bearing surfaces prior to (d) and maintaining separation of the opposing bearing surfaces through a self-pumping action within the gas-lubricated bearing.
18. The method of claim 11 wherein the working fluid comprises at least 70% helium by volume.
19. The method of claim 11 wherein steps (a) through (e) are performed on a dedicated servo track writer assembly prior to installation of the disc within a disc drive.

20. The method of claim 11 wherein steps (b) through (e) are performed following installation of the disc within a disc drive.
21. A data storage system comprising:
- a data storage disc;
 - a spindle assembly having a hub supporting the data storage disc and a spindle motor for rotating the hub;
 - an actuator assembly having an actuator arm supported by an actuator bearing for positioning the actuator arm relative to the data storage disc, wherein at least one of the spindle motor and the actuator bearing comprises a gas-lubricated bearing with a working fluid comprising helium; and
 - a head supported by the actuator arm relative to the data storage disc.